

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listing of claims in the application.

LISTING OF CLAIMS

Claim 1 (Previously Presented) A second storage comprising:
a plurality of nonvolatile data storing means;
a controller of the nonvolatile data storing means; ~~and~~
an internal network for interconnecting the nonvolatile data storing means with the controller,

wherein the controller includes a plurality of network transportation ports connected to different networks, respectively, an access controller for processing I/O commands requested for the transportation ports, and an access controlling table for storing **access control setting information** which defines the I/O commands that are to be authorized between each of the plurality of transportation ports and each of the plurality of nonvolatile data storing means; and

a manager coupled to said controller for setting or changing said access control setting information,

wherein the different types of I/O commands include READ and WRITE and the access control setting information includes READ only enable or READ and WRITE only enable information for each of the network transportation ports, said READ only or said READ and WRITE only information being changed by the manger, and

wherein the controller controls to allow or deny access sent via the network based on said READ only or READ and WRITE only information.

Claim 2 (Original) A second storage according to claim 1, wherein the access controller judges authorization or rejection of the I/O commands requested for the

transportation ports based on the access control setting information.

Claim 3 (Original) A second storage according to claim 1, wherein the access control setting information is set to the I/O commands to be authorized between a logical disk to be set to the plurality of nonvolatile data storing means and one of the plurality of transportation ports.

Claim 4 (Original) A second storage according to claim 1, comprising a management console for setting and changing the access control setting information.

Claim 5 (Original) A second storage according to claim 1, containing access control setting information which is set as readout unauthorized with respect to all the transportation ports.

Claim 6 (Original) A second storage according to claim 3, wherein the access controller reports the I/O command judged as unauthorized to the management console.

Claim 7 (Original) A second storage according to claim 5, wherein the management console comprises record means for recording the I/O commands reported from the access controller.

Claim 8 (Previously Presented) An access controlling method of a second storage, comprising:

a controller having a plurality of network ports connected to different networks, respectively, an access controller for processing I/O commands requested for the network ports, and an access controlling table for storing **access control setting information** which defines the I/O commands to be authorized between one of the plurality of network ports and one of the plurality of nonvolatile data storing means;

a plurality of nonvolatile data storing means; ~~and~~
an internal network for interconnecting the nonvolatile data storing means with the controller, wherein the access controller
extracts an identifier of a data targeted by the I/O command from the I/O command received at the network port,
confirms a nonvolatile data storing means to which the data will be read or stored, and the network port that received the I/O command,
refers to the access controlling table, and
judges whether or not the I/O command is authorized between the network port and the nonvolatile data storing means to which the data will be read or stored; and
setting or changing said access control information,
wherein the different types of I/O commands include READ and WRITE and the access control setting information includes READ only enable or READ and WRITE only enable information for each of the network transportation ports; and
wherein said READ only or said READ and WRITE only information is changed and the controller controls to allow or deny access sent via the network based on said READ only or READ and WRITE only information.

Claim 9 (Previously Presented) An access controlling method according to claim 8, wherein when a frequency of judgment that access non-authorization to specific data stored in the nonvolatile data storing means exceeds a predetermined threshold, access from the plurality of transportation ports to the data is not authorized.

Claim 10 (Previously Presented) An access controlling method according to claim 8, wherein when a frequency of judgment that access non-authorization to specific data stored in the nonvolatile data storing means exceeds a predetermined threshold, an administrator of the second storage is notified that the judgment frequency of the access non-authorization exceeds a predetermined threshold.

Claim 11 (Previously Presented) An access controlling method according to claim 8, wherein when a system of the I/O commands is the SCSI (Small Computer System Interface) standards, a "CHECK CONDITION" status is transmitted as a report of abnormalities.

Claim 12 (Previously Presented) An access controlling method according to claim 11, wherein when a "REQUEST SENSE" request is issued after a host computer received the "CHECK CONDITION" status, a code denoting abnormalities is transmitted as a sense key and sense data in response thereto.

Claim 13 (Previously Presented) An access controlling method according to claim 12, wherein an "Illegal Request" is transmitted as the sense key.

Claim 14 (Previously Presented) An access controlling method according to claim 12, wherein "Data Protected" is transmitted as the sense key.

Claim 15 (Previously Presented) An access controlling method according to claim 8, wherein when a system of the I/O commands is NFS (Network File System), a NFS error code "NFSERR_PERM" is transmitted as a report of the access non-authorization.

Claim 16 (Previously Presented) An access controlling method according to claim 8, wherein when a system of the I/O commands is NFS (Network File System), a NFS error code "NFSERR_ACCS" is transmitted as a report of the access non-authorization.

Claim 17 (Currently Amended) A second storage comprising:
a plurality of nonvolatile data storing devices;
a controller of the nonvolatile data storing devices connected to each of the data

storing devices;

said controller having a plurality of network transportation ports connected to different networks, respectively, an access controller for processing I/O commands of different types requested for the transportation ports, and an access controlling table for storing access control setting information for each of said network transportation ports that defines one of unauthorized access for the I/O commands or authorized access for at least one of the types of the I/O commands between each of the plurality of network transportation ports and each of the plurality of nonvolatile data storing devices, wherein said access controller judges the unauthorized access or the authorized access of the I/O commands requested for each of the transportation ports based on the access control setting information;

a manager coupled to said controller for setting or changing said access control information,

wherein the different types of I/O commands include READ and WRITE and the access control setting information includes READ only enable or READ and WRITE only enable information for each of the network transportation ports; and

said READ only or said READ and WRITE only information being changed by the manger and wherein the controller controls to allow or deny access sent via the network based on said READ only or READ and WRITE only information.

Claim 18 (Cancelled).

Claim 19 (Previously Presented) A second storage according to claim 17, further including a plurality of logical disks comprised of at least one of said data storing devices, wherein said access control setting information defines said one of the unauthorized access for the I/O commands or authorized access for at least one of the types of the I/O commands between each of the plurality of transportation ports and each of the plurality of the logical disks.

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Amendment

Response to Office Action mailed April 17, 2006

Claim 20 (Previously Presented) A second storage according to claim 17, further including a management console connected to said controller for setting and changing the access control setting information in the access controlling table for each of the network transportation ports.